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ABSTRACT

The World Bank has been assisting the efforts of developing countries to reform secondary education systems for more than 35 years. During this period, the context and imperatives for education reform have changed considerably due to various factors such as globalization of the world economy and the impact of new technologies. This paper is one of a series which addresses a wide range of topics within secondary education that reflect current challenges. The paper, a country case study, aims to provide an overview of the achievements, issues, and challenges of the primary and secondary education systems in China. The paper places particular emphasis on the secondary education system because the issues in secondary education are complicated and diverse and not well defined--secondary education includes lower and upper secondary schooling (formal, general, and vocational), vocational training, and other regularly available educational opportunities, such as non-formal equivalency programs. Data come from both Ministry of Education's publications of annual statistics and the published databases of UNESCO, the World Bank, UNDP. The paper is divided into the following sections: "Introduction"; "Description of the Chinese Education and Training System"; "Economic, Social and Demographic Context"; "Educational Context"; "Challenges in Primary Education"; "Challenges in Secondary Education and Training"; "Innovations and Government Strategies"; and "Summary of Issues." Contains 5 notes, 4 figures, 9 tables, and 19 references. (BT)

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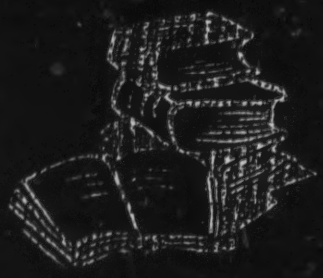
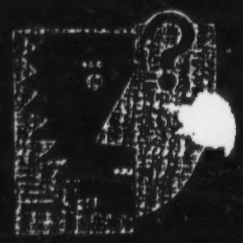
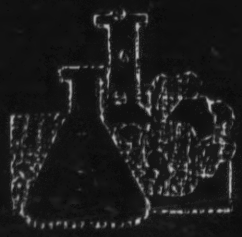


China: Challenges of Secondary Education

Xiaoyan Liang





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Contents

Foreword iii

Introduction 1

Description of the Chinese Education and Training System 1

Economic, Social and Demographic Context 3

Educational Context 4

Challenges in Primary Education 5

Challenges in Secondary Education and Training 6
- Goals and Objectives 6
- Coverage and Equity 6
- Efficiency 8
  - Internal efficiency 8
  - Public Expenditure on Education and Unit Costs (public) 9
  - External efficiency 10
- Teachers 11
- Quality and Learning 12
  - Curriculum and Teaching 12
  - Exams and Assessment 13
- Management and Institutional Development 14
  - General Secondary Education 14
  - Vocational/technical Education 15
- Private sector involvement 15

Innovations and Government Strategies 16
- Primary Education 16
- Secondary Education 17

Summary of Issues 18

References 20

Foreword

Welcome to the Secondary Education Series of the Human Development Network, Education Group at the World Bank.

The World Bank has been assisting developing countries in their efforts to reform their secondary education systems for more than 35 years. During this period, the context and imperatives for education reform have changed considerably due to various factors such as globalization of the world economy and the impact of new technologies. This new environment requires rethinking the traditional way of providing secondary education and training systems and both industrializing and industrialized countries are grappling how best to prepare their youth to become productive workforce as well as responsible citizens. Thus, this series will address a wide range of topics within secondary education that reflect the challenges that we are facing now.

The publications in this Secondary Education Series might broadly be considered to fall into two categories, though there are clearly overlaps: those papers addressing policy issues and those describing in more detail particular countries' experiences. This paper, "China: Challenges of Secondary Education", is in this second category. The intention behind these country case studies is to expose the complexity of secondary education and training systems and the correspondingly difficult choices that governments face in reforming them. It is only through a clearer understanding of what is happening in particular countries that fruitful discussion and analysis, and further research, can take place. We hope that these case studies stimulate debate. We welcome your comments.

World Bank
Human Development Network
Education Group
June 2001

Introduction

The Chinese education system is going through fundamental changes following the economic opening up and reforms. Since the 1980s, among other things, China has experimented and implemented universal primary education, fiscal decentralization in education, expansion of higher education, diversification (now perhaps reverse of diversification) at the secondary level. These reforms have resulted in a mixture of successes and challenges which are worth documenting as they provide valuable lessons to other countries undertaking similar reforms.

This paper, therefore, attempts to provide an overview of the achievements, issues and challenges of the primary and secondary education system in China. Emphasis is particularly placed on the secondary education system first because the paper originated as a case study on secondary education. More importantly, the issues in secondary education are more complicated and diverse but at the same time less well-known than those of the primary system. The term "secondary education" is loosely defined to include lower and upper secondary schooling (formal general and vocational), vocational training, and other regularly available education opportunities, such as non-formal equivalency programs. All types of secondary education and training require primary education.

The data employed in this report come from both Ministry of Education's publications of annual statistics, as well as from the published databases of UNESCO, the World Bank, UNDP.

Description of the Chinese Education and Training System

Primary education in China follows a six-year cycle except for a few localities where it is still 5 years. The primary age cohort is 7-12 years old. As of 1998, there are 600,000 primary schools and more than 139 million primary students enrolled in the system. There is no diversification of curriculum at this level, though regional variation is allowed to a certain extent to reflect the local culture.

In secondary education and training, there are two parts: the formal part and the informal (*Fei Zheng Gui Jiao Yu*) part, both following the 6-year cycle of primary education. Figure 1 describes the formal education system in China. The shaded area is the formal secondary education and training sector, which consists of junior secondary and senior secondary of general, vocational and technical tracks. Junior secondary (*Chu Zhong*) is a uniform 3-year cycle. Since it is part of compulsory education, there is usually no diversification of curriculum at this level [1].

[1] There are still a small number of junior secondary vocational schools with an enrollment of about 0.8 million in 1998. But this type of school is slowly disappearing.

Table 1 presents total number of schools, students, and teachers by level of education.

Table 1. Number of schools, student enrollment, and teachers by level of education

Type of Schools	No. of Schools	Enrolment (millions)	Full-time Teachers (m)
Total Primary	**609,626**	**139.0**	**5.80**
General Secondary Schools			
Junior Secondary	63,940	53.6	3.10
Senior	13,948	9.38	0.64
Specialized Secondary Schools			
Sec. Technical Schools	3,234	4.06	0.22
Teacher Training Schools (shi fan)	875	0.92	0.06
Vocational Schools			
Junior	1,472	0.87	0.04
Senior	8,602	4.55	0.30
Craftsmen Schools	4,395	1.9	0.12
Total Secondary	**96,466**	**75.3**	**4.50**

Source: Ministry of Education, 1998. Essential Statistics of Education in China.

Senior secondary (*Gao Zhong*) education is also a 3-year cycle. There are four types of senior secondary schools: general senior secondary (*Pu Tong Gao Zhong*), technical or specialized secondary (*Zhong Deng Zhuan Ke Xue Xiao*), vocational secondary (*Zhi Ye Gao Zhong*), and craftsmen schools (*Ji Shu Xue Xiao*). By 1998, 45% of senior secondary students were enrolled in the general education track, whereas the other 55% were enrolled in specialized, vocational, or craftsmen schools. The general senior secondary schools are the most popular among students and parents as it is the only channel which may lead students to higher education institutions. And most of the general senior secondary schools are physically attached to junior secondary schools.

- General senior secondary schools have an academic curriculum, with university entrance as its sole aim.

- Technical or specialized secondary schools are designed for the training of technicians.

Traditionally, such schools fed respective Government departments the required manpower at the technician level. Until recently, graduates were guaranteed employment and the Provincial Education Offices were responsible in assigning graduates to various industries. This employment guarantee, however, was abolished in the mid-90s in the midst of economic reform and graduates are now responsible for looking for their own jobs.

- Vocational high schools mostly offer courses that prepare students for employment in the service sector. Courses offered are usually demand-driven, for example, cooking, hair dressing, and fashion design. Even though there is no job guarantee, these schools offer programs only in the thriving economic sectors. Students are usually required to pay fees. Until a few years ago, this track has been quite popular among students due to possibility of immediate employment in the relatively high paying service sectors.

- Craftsmen schools are mostly attached to factories or enterprises and they train craftsmen. Enrolment in a craftsmen school implies employment by the unit. Craftsmen schools have become almost the least attractive option, because employment in these units are now seen as a dead-end career.

However, due to the recent expansion of higher education resulting in more places available in general senior secondary education, more and more graduates from junior middle schools are opting to continue to the general senior secondary education and hoping to eventually enroll in higher education, rather than going to secondary specialized, vocational high school, or craftsman schools.

There is also an enormous informal sector of adult secondary education and training. The informal sector enrolls a total of 67 million adults throughout the country in 1998, of which about 0.8 million are enrolled in general secondary schools for adults and the rest are enrolled in all types of specialized and vocational schools for adults. The adult secondary education is offered through various modes including full time, part time, evening and weekend courses. The majority of the adult technical and vocational schools are in rural areas (60 million).

Economic, Social and Demographic Context

With its 1.2 billion population and US$860 GNP per capita, China is a vast but low-income country. Life expectancy is estimated to be 69 years in 1998. Two thirds of its population live in rural areas. Fertility rate is low due to family planning policy and its population growth is only 0.9% in 2000. See Table 2 below for a list of basic social and economic statistics of China.

Table 2: Basic statistics 1995 to 1999

	1995	1998	1999
Population, total	**1.2 billion**	**1.2 billion**	**1.2 billion**
Population density (people per sq km)	129.0	..	..
Population growth (annual %)	*1.0*	*0.9*	*0.9*
Life expectancy at birth, total (years)	..	69.9	..
Fertility rate, total (births per woman)	..	*1.9*	..
Mortality rate, infant (per 1,000 live births)	..	31.1	..
Mortality rate, under-5 (per 1,000 live births)	..	*36.0*	..
Malnutrition prevalence (% of children under 5)	*15.8*	..	..
Urban population (% of total)	29.7	31.1	31.6
Population density, rural (people per sq km)	681.9	..	..
Illiteracy rate, adult male (% of males 15+)	10.7	9.3	8.8
Illiteracy rate, adult female (% of females 15+)	28.1	25.4	24.5

Source: World Bank Development Indicators Database, 2000.

Since the communists came to power in 1949, China has been under a centralized one-party regime and has gone through various political movements, some of which proved to be detrimental to the country's economic and social development. Reforms started in the early 1980s and since then the Chinese government has been eager to introduce market elements and foreign investments. So far, it has successfully decentralized its financial and administrative system. In education, local government became responsible for raising additional revenue for primary education beyond the state appropriation.

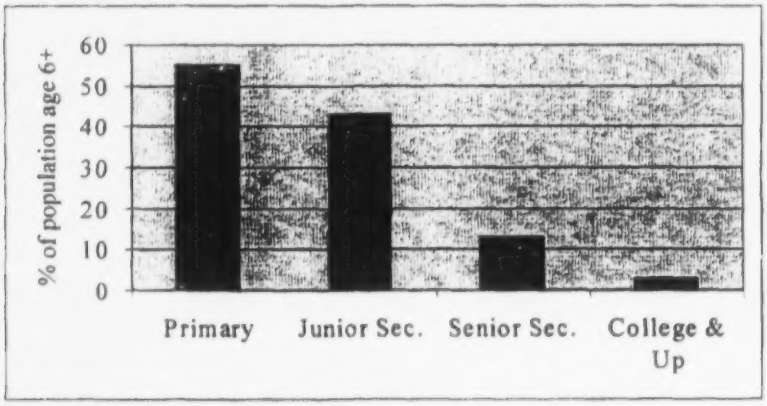
The adoption of market elements in the economy and the policy of allowing "a few people to get rich first" has resulted in larger inequity among the Chinese society which had been relatively equitable for several decades. Between 1988 and 1995, the Gini coefficient for the distribution of household income per capita increased from 0.23 to 0.33, (an increase of 43% in urban areas) (Khan et al., 1999). The income inequity is even bigger between the rural and urban areas. The sharp increase in inequity in only seven years is remarkable and has significant implications for the social sector in general and education in particular.

Educational Context

Traditionally, the Chinese society has a high respect for education. One thousand years ago, Confucius said "ren yi xue wei shang", meaning people should treat education and learning as the highest priority. After the destructive Cultural Revolution, modern education reform started in the 1986 when the Government first enacted the Law of Compulsory Education extending basic education to include three additional years of junior secondary, decentralized the education financing and administrative systems, diversified the senior secondary education, and started to introduce several market elements to the management of the system.

These initiatives have proved to be largely successful. By the 1990s, impressive achievements can be observed in education. The World Development Indicator 2000 estimates that only 8% of the male population over 15 years old is illiterate. The illiteracy rate is higher for females at the same age group: about 25%. About 55% of the adult population have attained primary level and another 43% have attained the 9 year junior middle level (Figure 2). And, using the Human Development Index, China is ranked in the middle, the 99th position among the 174 nations (UNDP, 2000).

Figure 2: Educational Attainment



Source: China Statistical Yearbook, 1998.

Challenges in Primary Education

Primary education coverage is currently almost universal in China. The average net primary enrollment in 1998 reached 98.9%. There were only three provinces in China which had a net primary enrollment rate lower than 95%: Chongqing (94.3%), Qinghai (92.1%), and Tibet (81.3%). Average dropout rate at primary level is about 1%. Implementation of 9-year compulsory education is also well under way. It is estimated that by 2000, attendance for 9 years of education will reach 85% of the target cohort. Also, due to the low population growth rate (0.9%) as a result of family planning policy, China is going to have a decreasing primary school age children in the upcoming years. This relieves the pressure on the government created by universal primary education and places the priority of the primary system increasingly on the efficiency, equity, quality, and relevance of the system.

Though the dropout rate is low, because the system is huge with a primary enrollment of 139 million, more than 1 million primary students drop out of the system every year, creating huge ***inefficiency*** in the system. One can also easily imagine that those who drop out of the system are more likely to be from families with low socioeconomic status. The ***equity*** situation is exacerbated by the introduction of financial decentralization in education. At the basic education level, there are disparities in access. The inequity in access is well illustrated by the case of three provinces which has net primary enrollment lower than 95%: Chongqing, Qinghai, and Tibet, all of which are economically least developed and geographically most hard-to-reach

provinces. Now that the financing of primary education is to mainly rely on the local counties, poor counties are having a difficult time providing universal primary education.

The education of ethnic minorities presents another major challenge. In 1998, only 8.9% of primary students and 7% of general secondary students were from ethnic minority background. These numbers represent major improvement from the past (the enrollment of ethnic minorities in 1979 represented only 5.3% of total enrollment in primary and 3.8% in secondary) (China Education Daily, April 29, 2000).

There is also great variation in the ***quality*** of education provided. Teacher quality and the physical conditions of schools vary due to diverse financial capabilities between rich and poor counties, between urban and rural areas, and between male and female. For example, in 1994, the per student recurrent expenditure of urban primary schools was 1.28 times that of rural ones; that ratio rose to 1.46 in 1997 (World Bank, 1999, Annex 1). It is therefore not surprising to see both model primary schools in Shanghai or Beijing which have first-rate facilities and English-speaking teachers, and dilapidated schools with leaking roofs in poor rural areas.

There are also issues related to the ***relevance of curriculum and testing and teaching methods***. The Chinese education system is known to be test-driven. Students are encouraged to memorize facts rather than develop their own problem-solving skills. Teaching methods are predominantly teacher-centered. Despite the recent efforts to diversify the curriculum by incorporating a higher proportion of the local element, curriculum, textbooks, and other teaching/learning materials are still pretty uniform across the country. Curriculum has not kept pace either with the economic reforms with strong emphasis on ideology, science, mathematics, technology and engineering. New skills and attitudes that are more aligned with the modern society are not being systematically cultivated.

Challenges in Secondary Education and Training

At the secondary level, the picture is much more complex. The challenges are also multifaceted. This section describes (a) the goals and objectives; (b) coverage and equity, (c) efficiency, (d) quality and learning, (e) management and institutional development, and (f) private sector involvement in secondary education and training.

Goals and Objectives

Officially, secondary education has the "double task" of "providing the higher level of schools with qualified students and training a fine labor reserve force for society". This statement is a manifestation of the inherent dilemma in the system rather than a guideline, since it is not clear whether all schools should train all students with this aim, or whether a certain division of labor should take place (Thogersen, 1990).

Coverage and Equity

Table 2 lists the gross enrollment ratios at various types of secondary schools. By 1997, the gross enrollment ratios for junior secondary had reached roughly 80%. However, ratios at the

senior secondary level are much lower: 15% in general senior track, 6% in technical, 7% in vocational, and 3% in craftsmen schools (Table 3). This big drop of enrollment at senior secondary level is a combined result of lacking access and higher fees at this level.

Table 3: Gross Enrollment Ratio by Type of Secondary Education

Type of Schools	Gross Enrollment Ratio	Female enrollment as % of total enrollment
General Secondary Schools		45.7%
Junior Secondary	80%	
Senior	15%	
Specialized Secondary Schools		
Sec. Technical Schools	6%	52%
Teacher Training Schools	1.4%	65%
Vocational Schools		48%
Junior	1%	
Senior	7%	
Craftsmen Schools	3%	47%

Source: Ministry of Education, 1998.

These national figures disguise the disparities across the country. Poor counties have lower enrollment rates than their richer counterparts. Universal access to lower secondary has not been achieved in about half of the counties. Transition rates are also much lower in rural counties compared to cities and towns (Table 4). There is also evidence that the pupil:teacher ratio is higher in rural areas. Hannum (1999) found that in absolute terms, the number of junior and senior high school teachers in rural areas peaked during the cultural revolution when intellectuals are sent to work in the countryside. However, after the reforms in early 1980s, the numbers have dropped drastically, resulting in a shortage of high school teachers in the rural areas.

Table 4: Transition Ratios in 1990

	City	Town	County
Primary-Junior middle	104.6	112.5	63.7
Junior middle – senior high	40.4	54.2	8.7

Source: Hannum, 1999.

In general, there is no clear gender tracking. One exception is teacher training schools where 65% of the students are females compared to 46% in general secondary enrollment and 48% in vocational school enrollment are female. There is evidence that gender inequality is particularly serious in minority counties in the western part of the country (World Bank, 1999, Annex 1). Rural women fare the worst. Among 16-year-olds in 1990, almost one in 10 rural females had not attained a primary level of education, compared to less than two in 100 urban women of the same age (Hanuum, 1999).

Efficiency

Internal efficiency

Formal secondary education has relatively high internal efficiency. In 1998, 94% of the primary graduates progressed to enroll in junior secondary schools and more than 50% of junior secondary graduates entered senior secondary schools. Graduation rates are high at all types of secondary education (Table 5)

Table 5: Graduation Rates

Type of Schools	Graduation Rates
General Secondary Schools	
Junior Secondary	80%
Senior	70%
Specialized Secondary Schools	
Sec. Technical Schools	73%
Teacher Training Schools	96%
Vocational Schools	
Junior	66%
Senior	77%
Crafismen Schools	95%

Source: Ministry of Education, 1998. Essential Statistics of Education in China.

The drop-out rate among junior secondary students was 3.23%. Even though it is considered very low by international standards, China Education Daily observed on November 5 1999:

> *"dropout rate among junior secondary students has increased. In 1998 the total number of junior secondary drop-outs was 1.67 million, or 3.23% of all junior secondary students. This rate was actually up from 3.14% in 1997. Journalists have appealed to educational authorities to pay greater attention to this problem."*

The average pupil:teacher ratios was 18:1 at junior secondary schools and 16:1 at senior secondary schools [2]. However, there is disparity across provinces. In sparsely populated provinces such as Qinghai and Tibet, the ratios were close 10:1, whereas in poor and relatively more populated Guangxi and Anhui provinces the ratios were more than 22:1.

Graduation rates in the ***VTE sector*** are also high. Among those who enroll, 66% graduate from junior vocational schools and 77% graduate from senior vocational/technical schools in 1998 (Ministry of Education, 1998). However, the VTE sector demonstrates less

[2] Pupil:teacher ratio is different from class size in secondary education in China, since schools are required to have one teacher for every subject taught.

efficiency in measures other than graduation rates. There is evidence that adequate utilization of staff and physical resources is impeded by low school enrollments, too few part-time and short courses, and low teaching hours per week. For example, in Hubei Province every county of the Province had an average of 11 secondary vocational schools in 1995, yet the average school enrolment was only 426 students [3].

Public Expenditure on Education and Unit Costs (public)

According to the World Education Report, 2000, China devotes about 2.3% of its GNP to education. This level of public expenditure is low compared to the world average of 4.8% of GNP (Table 6). It is also low compared to the average of 3.9% for less developed countries. If we relate this low level of public expenditure to the relatively high achievement in primary and secondary education noted above, we get a sense of the efficiency of the Chinese education system.

Table 6: Public Expenditure on Education as % of GNP

	1980	1985	1990	1995	1997
WORLD TOTAL	**4.9**	**4.8**	**4.7**	**4.7**	**4.8**
More developed regions	5.1	4.9	5.0	5.0	5.1
Of which:					
Northern America	5.2	5.0	5.4	5.3	5.4
Asia/Oceania	5.0	4.3	4.0	4.0	4.0
Europe	5.2	5.2	5.1	5.3	5.3
Countries in transition	6.4	6.3	4.3	4.6	4.8
Less developed regions	3.8	3.9	3.8	3.8	3.9
Of which:					
Sub-Saharan Africa	5.0	4.5	4.6	5.1	5.1
Arab States	4.1	5.8	4.9	5.0	5.4
Latin America/Caribbean	3.9	4.0	4.0	4.5	4.6
Eastern Asia/Oceania	2.8	3.1	3.0	2.9	2.9
Of which:					
China	2.5	2.5	2.3	2.3	2.3
Southern Asia	4.1	3.4	3.7	3.2	3.3
Of which:					
India	3.0	3.5	3.9	3.3	3.3
Least developed countries	2.8	2.7	2.3	2.1	2.0

Source: UNESCO, 2000.

[3] From the 1999 academic year the Hubei provincial government began to merge 100 vocational schools and enlarged school enrolments to an average of 2000 students for all of its 30 counties (China Education Daily).

Within secondary education, unit costs are uneven across various types of secondary education and training. A careful comparison of the relative costs of general and vocational/technical education has not yet been undertaken. Data available for two provinces: Guangdong and Shandong (Table 7) show that (1) public expenditure per pupil at secondary level varies by province: richer provinces seem to have higher expenditures; (2) secondary vocational and technical schools tend to be more costly than general senior secondary schools; (3) the most expensive track of secondary education is the secondary technical/specialized schools which usually require heavy equipment and have higher paid teachers. If capital costs were included, costs would be even higher for vocational and technical education. Further, since on average 50% of expenditures in VTE schools came from government sources as compared to less than 50% in senior secondary schools, the total cost of VTE education including both private and public sources will be even higher.

Table 7: Current Government Expenditure per Full-time student, Secondary Education, by Type, Guangdong and Shandong Provinces, 1993/94

	Lower Secondary	Senior Secondary	Secondary Vocational	Secondary Technical
Guangdong	569	1,641	1,350	3,836
Shandong	343	810	1,388	1,775

Source: World Bank, 1996.

External efficiency

No recent information is available on the returns to different tracks of secondary education. This is due to several reasons: (1) the non-comparability of students enrolled in different tracks since the cream of lower secondary school leavers goes to upper secondary academic track while vocational/technical schools get the rest; (2) the underdeveloped state of the labor market where, until very recently, most of the vocational/technical graduates work for state enterprises and unemployment is almost zero. And their wages are determined by administrative rules. The 1993 tracer study found that 89% of 1992 graduates from secondary technical/specialized schools and 50% of graduates from vocational schools were first employed in state-owned enterprises.

However, the recent state-owned enterprise (SOE) reform has resulted in closing of many SOEs and the unemployment of its workers. This has created an imperative for the graduates from vocational/technical schools to start looking for employment on their own. How well are these students faring in the labor market? There is evidence that employers increasingly look for employers with general flexible cognitive skills rather then narrowly specialized. A recent study conducted in Shenzheng found that "vocational/technical graduates have demonstrated only modest or no productivity advantages over general education graduates". In fact, the study found that employers favor general-education graduates over vocational/technical graduates because of their trainability and adaptability to production changes (Xiao & Tsang, 1999). Recent informal

surveys by the World Bank staff of international companies such as Motorola and five star hotels found that employers look more for employees with certain attitudes such as hard-working, collaborative, communicative, rather than specific skills. Such findings have significant implication on the future management and curriculum of vocational and technical schools.

Teachers

Junior secondary teachers are required to be at least graduates of three-year sub-degree programs in teacher training colleges or graduates from three year in-service programs from colleges of education. Senior secondary teachers are required to be graduates from four-year degree programs in normal universities or graduates from four-year in-service training from colleges of education. However, these qualifications are not always met. Table 8 below shows that only 83% of junior secondary school teachers met the requirement. The other 17% had only completed specialized secondary education or even lower. At the senior secondary level, only 63% of teachers have the required bachelor's degree. Teachers in vocational schools are on average less qualified than in general secondary schools.

Table 8: Teacher Qualifications by Type of Secondary School

Type of School	Bachelor's degree and up	Diploma from three-year colleges	Completed Specialized Secondary Education	Completed Senior Secondary and Lower	Total
Junior Secondary	11%	72%	13%	4%	100%
Senior Secondary	63%	34%	2%	1%	100%
Junior Vocational	5%	66%	25%	4%	100%
Senior Vocational	37%	53%	8%	2%	100%

Source: Ministry of Education, 1998. Essential Statistics of Education in China.

The Chinese government intends to further upgrade secondary school teacher qualifications in order to further boost the quality of education. This policy will not only have implications for teacher training as a larger number of practicing teachers will have to be trained, it will also have implications for teacher remuneration. Currently in the state sector, primary and secondary school teachers are the lowest-paid professionals (Table 9)[4]. Their average annual wages of 6099 yuan (equivalent to US$762, 0.88 GDP per capita) and 6663 yuan (US$832, 0.97 GDP per capita) are only higher than the farming and wholesale sectors (Table 9). And compared to the teaching profession, the farming and wholesale sectors have greater potential for higher earnings in the private sector. Private sector (other types of ownership) teachers are better paid than their public counterparts and public teachers are better paid than teachers teaching in urban collective owned schools.

Further, even by international standards, the Chinese primary and secondary teachers are not well paid. The salary to GDP per capita ratio of less than 1 is low compared to the average

[4] In October 1999, thanks to China's 50th anniversary, teachers nationwide received a raise. The exact magnitude is not clear.

of 1.5 to 2 worldwide. To attract good teachers, the Chinese government will have to redesign the teacher remuneration system to make it more in line with the national labor market situation and international standards.

Table 9: Teacher wage compared to other sectors

Sector	State-Owned Units	Urban Collective Owned Units	Other types of Ownership
Farming, forestry, animal husbandry and fishery	4,304	3,945	7,061
Wholesale and retail trade and catering service	5,134	3,873	8,051
Manufacturing	6,008	4,120	8,376
Primary school teachers	**6,099**	**4,546**	**6,535**
Secondary school teachers	**6,663**	**4,732**	**7,907**
Government agencies, party agencies and social organizations	6,985	6,244	
Construction	7,388	5,466	7,517
Real estate trade	8,570	7,687	13,249
Scientific research and polytechnical services	8,974	7,749	14,370
Transport, storage, post and telecommunications	9,303	4,057	13,734
Banking and insurance	10,012	7,634	17,970

Source: China Statistical Yearbook, 1998.

Quality and Learning

Curriculum and Teaching

There is a centralized control over the curriculum. Instructional plans and curriculum guidelines are centrally decided by the Ministry of Education, and teaching materials are nationally standardized. This leaves little room for local innovation and flexibility on secondary curriculum. However, recognizing that national unity and cohesion comes from the respect for all cultures within rather than from the dominance of Han culture and language, the Chinese government has made recent efforts to diversify curriculum and textbooks with a core central curriculum. Textbook and other teaching/learning materials are being designed in minority languages and curriculum elements that are sensitive to local and minority cultures started to be incorporated. Currently eight textbook editions have been developed across the country at junior secondary level.

Teaching and learning is completely driven by the exams, particularly the national higher education entrance exam which is administered only once a year. Due to limited places in the higher education institution, the competition is fierce. This has resulted in teaching and learning

going very deep in the exam subjects while are the same time ignoring the elective and other subjects. Also, the exam questions tend to be memory driven with few open-ended or problem-solving questions. The situation was described in 1983 by the then vice-minister of Education Zhang Jian as:

> *"In present day middle schools, exams inhibit teaching rather than promote it. A profusion of questions join together to form a wave in a sea of exams, test and final examinations deluging students, teachers and even parents. In general middle schools the pursuit of higher transition rates ties the hands and feet of teachers and students like an invisible rope"*

The situation is expected to improve as expansion of higher education is being planned and the innovations are being encouraged to reform the college entrance exam in recent years. Substantial technical assistance will be needed to implement these reforms.

The curriculum of technical and vocational education comprises largely of three components: academic subjects (languages and mathematics), theories relevant to specialized areas), and practical subjects. The academic part of the curriculum is much less challenging that in general senior schools. There used to be a unified curriculum for all technical and vocational schools, but there is now a general tendency of diversification.

In addition, despite the low pupil:teacher ratios observed, class sizes are generally very large in Chinese secondary schools. This is because schools have to employ all the required subject teachers to cover the curriculum. But teachers do not have to teach all the time. In fact, teachers devote a substantial amount of time in preparing lessons, grading homework, doing research on their own, and providing individual instruction to problem students in their offices. This feature of the Chinese education has been considered as one of the secrets to the success of the education in China. On the other hand, the large class size and the pressure to do well in exams are in part to blame for the teacher-centered and drill approach to teaching observed in Chinese secondary classrooms.

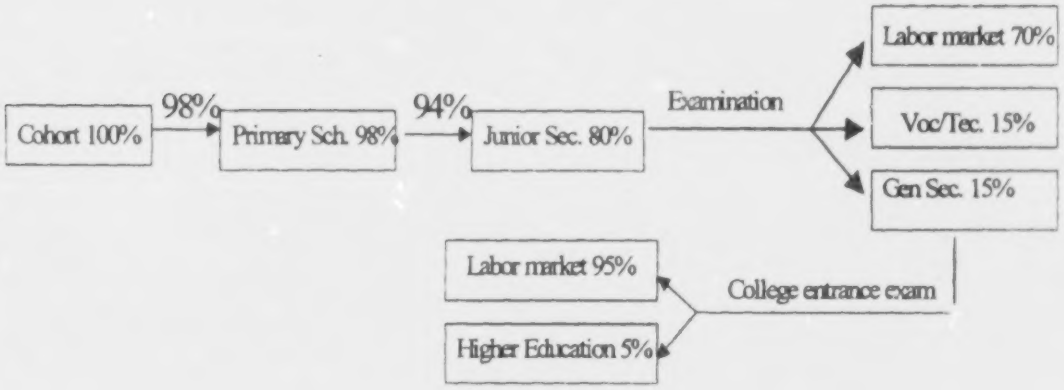
Exams and Assessment

Though junior secondary education is now compulsory and not tied to any exams, supply is still constrained by local government budgets and coverage is still being phased in. However, it is safe to say that whoever want to go to junior secondary and can afford the fees are able to do so now. Graduates from junior secondary education have to sit for two exams: one qualification exam for diploma and another selection exam which will determine whether the student will go to senior secondary, vocational/technical schools, or directly into the labor market. Graduates from the general senior secondary schools also have to sit for two exams: one qualification exam which will determine whether they receive a high school diploma and the famous national higher education entrance exam which will determine whether they can go to college. Figure 3 is a cohort flow chart as students advance through the system.

Chinese students are known to have a solid foundation in mathematics and basic sciences. There are many anecdotal stories of Chinese students winning international Olympics of mathematics. Graduates from Chinese higher education institutions also tend to excel in

standards tests administered by the U.S. Education Testing Services. On the other hand, they are also known to have less practical and creative skills. To date, no systematic comparison has been done to compare the achievement of graduates from secondary schools.

Figure 3: Cohort Flow in the Chinese Education System



Management and Institutional Development

General Secondary Education

The central body of the education management in China is the Ministry of Education. However, education administration is of a very decentralized nature since the reform in the 1980s toward local management of schools. There are four levels of government in China: national, provincial, county, and township or local level. The basic administrative unit is county. The county government is responsible for financing the senior secondary schools (apart from the state appropriation) and for appointing teachers and supervising the instruction. The township government is responsible for financing junior secondary schools (apart from the state appropriation) and the appointment of teachers and supervision of instruction at this level.

Recent tax reforms allow the provinces to retain most of local revenue, *State appropriation*, which covers most of the recurrent expenditure including salaries and administrative expenditures, is paid almost entirely from provincial revenues. The provincial revenues often come from local revenues, for example at county level, because of similar reform to allow local governments to retain their own revenues. Therefore, the local government is essentially paying for almost all of the recurrent expenditures in basic education. Figures show that in 1992, local contribution to education expenditures was about 88.1% of the total. (Cheng, 1997b).

The Chinese education also relies heavily on local private donations and incomes generated by schools themselves. Aside from state appropriation/provincial revenues, capital construction is often supported by local private donations. Improvement of school facilities and welfare of teachers (especially community teachers) also frequently have to rely on income

gained by schools themselves through economic activities such as school-operated shops and vegetable gardens. Such income is labeled non-governmental and extra budgetary. In 1992, the non-governmental contributions amounted to 32.3% of total educational expenditures (Cheng, 1997b).

Vocational/technical Education

Vocational and technical secondary schools are directed by technical ministries as well as by the Ministry of Education. They are managed directly by education, technical, and labor bureaus at the local, district, county, and provincial levels. Since there are multiple parties involved in the administration, the situation is sometimes very confusing.

For example, the Ministry of Labor has their own vocational schools but it is also in charge of evaluating all the vocational school graduates including those out of their jurisdiction for professional certification. This has caused resentment from other ministries such as the Ministry of Education which feel that the Ministry of Labor is giving preferential treatment to their own schools.

Technical and vocational high schools are usually the result of collaboration between education and employment sectors. The non-education partner usually provides funding for special equipment, practical instructors and facilities for practicum. The education counterpart provides teaching of the academic and theoretical components. Students are usually expected to pay a fee to cover most of the recurrent costs. This model has inspired other types of vocational and technical schools to follow suit. Nevertheless, specialized secondary schools and craftsmen schools have other organizational constraints which forbid them from evolving quickly.

Private sector involvement

The Chinese government encourages the development of private schools at all the non-compulsory levels including preschool, senior secondary education, and higher education. Primary and lower secondary, the compulsory education, is considered a state responsibility. To date, no laws have been passed on private provision of schooling. The existing set of regulations appear to be haphazard and are subject to interpretation.

Meanwhile, all types of private schools have been set up and are growing quickly. Statistics vary depending on the source of the data and the definition of private school. Zhu (1994) reported in an address to the Chinese People's Political consultative Conference that there are "some 700 secondary schools enrolling a total of 130,000 students". In addition, the State Education commission reported 851 unofficial secondary schools (Lin, 1994). In 1997, the total number of privates schools and institutions has been estimated at 70,000, equal to around 7.5% of the number of public schools. Even though there is no official announcement, there is a tacit understanding that the proportion of private provision should reach 20% of the total enrollment.

There are different types of private secondary schools. "Elite" schools charge high tuition and fees and respond to demands for higher quality education (tuition in the name of

"donation" ranges 10,000 to 20,000 yuan, equivalent to almost 1.5–3 times of GDP per capita) [5]. In contrast, less advantaged private secondary schools in townships and urban areas are designed mainly for students who fail to pass the entrance exam. Students enroll in these schools in the hope of having a second chance of getting into college. Many parents also enroll their children in these schools so the students have a place to stay out of trouble as they are still too young to join the work force. Tuition may range from 1500 to 4000 yuan annually. Rural private schools charge much lower fees (about 300 to 700 yuan). These are a natural outgrowth of the desperate state of rural public education: low quality and high fees. There are also "private schools" attached to prestigious public schools. These schools use the public facilities after official hours. Revenues are kept by the school and used at their discretion for equipment, repairs, and teacher bonuses. They use their academic reputation and good facilities to attract students.

Private vocational/technical schools are still few and weak, confined mainly to quick-profit, short course specialization. Popular private vocational technical schools generally offer two to three year programs, and charge a tuition of about 4000-8000 yuan. They provide specific technical skills to students who will be much more employable after graduation. Subjects of study include hotel management, tourism, accounting, secretarial work, commercial English, driving, and cooking.

Increasing stratification of secondary schools signals the emergence of severe equity erosion. While the elite public and private secondary schools have rich resources, vocational and rural schools, having much less political, intellectual, and economic capital upon which to draw, are increasingly disadvantaged.

Innovations and Government Strategies

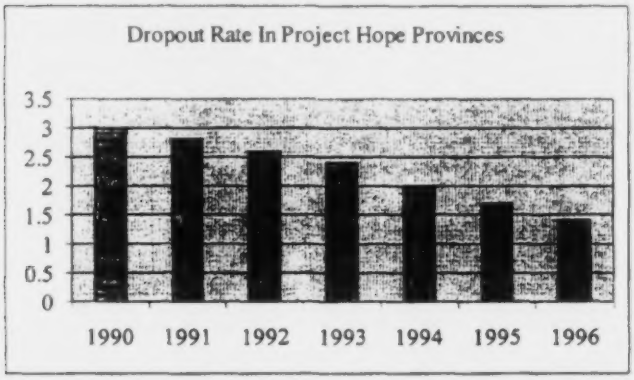
Primary Education

Government strategy at universalizing the primary education is centered on fiscal decentralization of the system. To reduce the inequality in financing of primary education, both the central and provincial educational budgets have categorical allocations to aid poor areas, but such allocations are usually too small compared to the needs.

To help alleviate the situation in poor areas, the most notable innovation in primary education is Project Hope (Xi Wuang Gong Chen). In response to the high dropout rate and lack of access to primary education, the China Youth Foundation, a non-project non-governmental organization, launched Project Hope in 1989, aimed at providing assistance to school-age children who are not enrolled in primary schools for various reasons. By the end of 1997, Project Hope had raised more than 1.2 billion Chinese Yuan (equivalent to about US$150 million). It has helped more than 1.8 million out-of-school children to get back to the classrooms and constructed 5256 Project Hope primary schools (Report on the Evaluation of Hope Project, 1998). A comprehensive evaluation was conducted to assess the impact of Project Hope on schooling. It was found that in provinces implementing Project Hope, the dropout rate has been steadily decreasing from 1990 to 1996 (China Youth Development Foundation, 1998).

[5] Since schools are not allowed to charge such high tuition, schools frequently charge the amount in the name of "private donation".

Figure 4. Dropout Rate in Project Hope Provinces (%)



Further, bilingual education is also introduced in primary schools so that children from ethnic minority groups have the opportunity to learn Mandarin and at the same time maintain their native languages. The encouragement of using local language as a media for education is illustrated by the Tibet Science and Technology Weekly, which is published in Tivetan by the Science and Technology of Tibet Autonomous Region Government and has a weekly circulation of 15,000.

Secondary Education

Secondary school policies in China's reform decade embodied a contest between expansion and diversification, reflecting the contradictory goal, evident in educational policy since 1949, of balancing equality of educational opportunity with the advanced training required for economic development. Two major reforms extended compulsory education to include lower secondary and diversified secondary education at the senior high school level. By 1990, China had come close to meeting its goal of vocationalizing one half of its senior secondary schools.

A World Bank policy paper (1999) recommends that China should consider 12-year rather than 9-year compulsory education so that it is more comparable to the OECD standards. The Chinese government considers this recommendation as being too ambitious for now but has agreed that expansion of the secondary education sector is necessary particularly for the general track. The government recently relaxed the ratio between general and vocational secondary education expecting that more and more junior secondary graduates will be able to go to general secondary education. This is because the government has become aware of the increasing demand for higher education. The Chinese government has decided to spend more on education with a goal of additional one percentage of GDP for the next three years. The higher education sector expanded by 40% in 1998 and is expected to continue expanding at this rate for the next three years.

This expansion at the higher education level has significant implications at the secondary level. As the probability of enrolling in higher education increases, the demand for general senior secondary education increases dramatically while at the same time the demand for vocational, craftsman schools, and specialized schools correspondingly decreases.

The government also plans to upgrade some top secondary technical schools into tertiary level polytechnic type of institutions. Some provinces such as Hubei have started to merge some of their vocational and technical schools to increase efficiency.

The Ministry of Education has also increased the pace of reform of the senior secondary school curriculum. The reform will continue on reduce the content and resolve the problems of "too advanced, too difficult, too deep and too much", so as to offer more time for students to study new knowledge and new technology more freely. With the successful experience of Jiangxi Province, Shanxi Province and Tianjin Municipality, more provinces would use the new pilot curriculum and textbooks next academic year.

In Zhejiang Province, a 10 Decisions on Lightening Primary and Secondary Students' Course Work Burden was issued. The decisions include changing the 100-mark system to a 5 class system; to set up a Quality Report System to reform the external examination of senior secondary education, allowing students to take the external examination several times; to forbid school and teachers adding extra subjects and lessons; and to forbid schools setting up morning self-study lessons. The document also addressed homework: no homework for primary 1 pupils, half an hour to one hour for primary 2-6 pupils; 1.5 hours for junior secondary students and 2 hours for senior secondary students each day (Guangming Daily, November 11, 1999).

There are also signs that the national higher education entrance examination will be revised so that a higher proportion of the questions test students' creativity and problem-solving skills rather than memorized facts.

Summary of Issues

- ***Equity erosion will become increasing serious.*** The current reforms in education are more focused on quantity and quality in both primary and secondary education. All these reforms are accentuating the existing differences between the rich and the poor and these differences are likely to amplify in the future. Existing research clearly documents the fact that education is a major determinant of income and parental education is a major determinant of children's attainment. The inequities that are appearing today in the implementation of expanded school attainment are going to become amplified in the future. Inequities might be less expensive to take care of now rather than waiting when they become may unmanageably large.

- The ***aims and objectives*** of the secondary education and training need to be further clarified: what should a general secondary graduate student master in terms of skills, knowledge, and behaviors and attitudes? What should be the balance between general/academic and vocational/technical education? Who should be responsible for the provision of general versus vocational skills?

- ***Quantitative expansion*** will be unavoidable in the Chinese secondary education and training sector, particularly in the general track of senior secondary education.
  - There is a need to put in more resources for infrastructure.
  - Mechanisms should be put in place so that students from rural remote areas have equal access to secondary education and training.
  - Laws and detailed regulations on private sector involvement in education should be put in place as soon as possible.
- Secondary education will need to further improve its ***quality, efficiency, and relevance***
  - The public VET system needs to become self-supporting and responsive to industry's needs.
  - Curriculum, assessment, and teaching and learning methods need to be thoroughly reviewed and revised so that skills that are more aligned with the market economy can be instilled. This will have implications for teacher training as well.
  - Better remuneration and incentive system should be designed for teachers in order to attract more qualified teachers.
- There is much ***inflexibility*** resulting from the dual track of general versus vocational/technical education. Students who go to the vocational and technical tracks are not able to go to higher education institutions through the college entrance exam. And, if graduates from general secondary education fail the college entrance exam, the only chance left is the adult higher education which does not have as high reputation. These factors result in fierce life-time competition for university entrance exam and high pressure on the general high schools.
- State-owned enterprise workers whose skills are no longer up-to-date and who are laid off need to be ***retrained.*** The majority of them will need to be trained at the secondary level.

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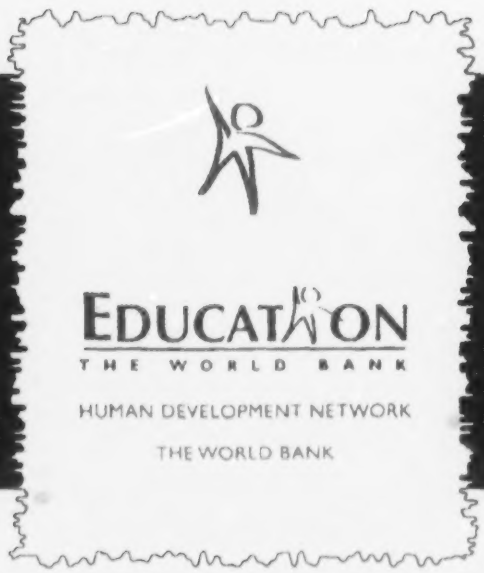

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